INSTRUCTION MANUAL FOR

MODEL No. 255(a)

SERIAL No. 5/353

BETA ELECTRIC CORP.
NEW YORK, N. Y.

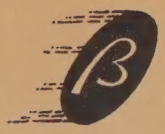
X/225

NOTE:

Please read the entire instruction manual thoroughly before attempting to operate the unit.

X/225

If this is not convenient, please read the operating instructions completely before applying power for the first time.



BETA ELECTRIC CORP.,

NEW YORK 29, N. Y.

INSTRUCTION MANUAL

FOR

MODEL 255(a)

REGULATED POWER SUPPLY

500-3,000 VOLTS DC

5 MILLIAMPERES

HIGH VOLTAGE REVERSIBLE POLARITY

November, 1954

SECTION 1 - - - - - - - - - SPECIFICATIONS

A: ELECTRICAL:

(a) Input voltage:	105-125 volts, 60 cycles, single phase.
(b) Input current:	1.5 amperes maximum.
(c) Output voltage:	500-3,000 volts dc, continuously variable.
(d) Output current:	5 milliamperes available over entire range.
(e) Polarity:	High voltage reversible with respect to ground (cabinet.)
(f) Ripple:	Less than 1/2% rms at any rated condition.
(g) Regulation and Line voltage stability:	Less than 0.5% at any voltage for load changes of from 0 - 5 milliamperes dc and/or simultaneous line voltage changes from 105-125 volts ac. Internal impedance less than 10 k ohms from 30-10,000 cycles per second.
(h) Meters:	1: OUTPUT VOLTAGE: 0-3,000 VOLTS DC; 3% initial accuracy; 4" square case. 2: OUTPUT CURRENT: 0-5 MILLIAMPERES DC; 3% initial accuracy; 4" square case.
(i) Safety features:	1: Provision for external interlock. 2: Interlock on door.
(j) Protective features:	1: Overload tripping circuit which removes input power for loads over 6 milliamperes. 2: Fuses in both sides of main line. 3: Fuse in input circuit of high voltage transformer. 4: Surge suppressing neon glow lamp across kilovoltmeter.
(k) Controls:	1: MAIN POWER toggle switch. 2: HIGH VOLTAGE CONTROL rheostat. 3: HIGH VOLTAGE ON pushbutton. 4: HIGH VOLTAGE OFF & OVERLOAD RESET pushbutton.
(l) Pilot lights:	1: Incandescent: a: POWER ON, green. b: HIGH VOLTAGE ON, red. c: OVERLOAD, yellow

- - - - - - - - - -

Pilot lights, con't.

2: Neon:
- a: MAIN FUSES open (2).
- b: EXTERNAL INTERLOCK OPEN.
- c: HIGH VOLTAGE TRANSFORMER INPUT FUSE open.
- d: DOOR INTERLOCK OPEN.
- e: AUX. 115 VOLT AC OUTLET fuse open.

(m) Auxiliary feature: Standard 2-prong, 117 volt convenience outlet, energized when the control cabinet is energized.

(n) Connections: Input: Recessed 2-prong male receptacle.
Output: Binding post inside cabinet.

B: MECHANICAL:

Control cabinet: Size: 22-1/2" wide x 20" high x 15" deep.
Weight: 88 pounds.
Finish: Black wrinkle.

* *

SECTION II - - - - GENERAL

a: The βeta Electric Corp. Model 255a power supply, 500-3,000 volts dc, has been designed to provide a compact, reliable, high voltage source of moderate current for general electron-tube applications.

This unit is suitable for any application where a regulated source of high voltage is required, and very low ripple, with reversible high voltage polarity, is desired.

b: The basic high voltage circuit is a half-wave voltage rectifier. Regulation is accomplished by means of a standard "series regulator " circuit.

c: Polarity is reversed by reversing the entire rectifying and regulation circuitry.

* *

SECTION III - - THEORY OF OPERATION

All of the circuits and functions of the power supply are quite straight-forward, and can be readily understood by reference to the basic schematic circuit diagram, β-b-255a-1. Main ac power and dc circuits are indicated heavily. Light lines represent control circuits for meters, filtering or indicating circuits. In addition, the detailed parts list supplied herewith describes the function of each component.

Several novel features which are typical of βeta Electric Corp. engineering to reduce size and cost of the power supply, and to increase convenience of use, are briefly outlined herewith. In addition, unusual circuit features are described.

- -

Section III, cont.

a: Neon pilot light illuminating resistors:

Resistors such as R1 ensure illumination of adjacent neon pilot lights in case of blown fuse or open switch paralleled by the neon light, and open circuit beyond the resistor.

2: Incandescent pilot light ballast resistors:

Resistors such as R2 are ballast resistors for the incandescent pilot lights, to lengthen lamp life.

3: Holding relay for overload protection:

Relay K3 pulls in when contacts 3a of the overload relay K2 close momentarily. When K3 is energized, contacts 3a close and maintain K3 energized, even though contacts 2a have now opened up, removing primary power from the high voltage circuit and eliminating the overload condition.

Depressing S3 HIGH VOLTAGE OFF & OVERLOAD RESET, de-energizes K3 and resets the system for operation after the overload.

Pilot light I6, OVERLOAD, is illuminated for overload condition.

4: High voltage circuits:

The high voltage half-wave rectifier circuit consists of transformer T1 in conjunction with rectifier V1 and capacitor C1.

5: Metering and overload circuits:

The output voltage metering circuit consists of a resistor R14 in series with meter M2, OUTPUT VOLTAGE, and calibrating resistors, R15, 16 and 17. The output current metering circuit consists of meter M1, OUTPUT CURRENT, shunted by C3.

The overload relay, K2, is in series with M1. This relay is shunted with resistor R13, to ensure pull in at 6 ma. Capacitor C4 is a surge reducer.

6: Regulating circuitry:

A conventional "series" regulator circuit is used to obtain the desired regulation and low ripple. V2 is the "series" tube. R11 and R12 comprise the feedback resistor to the first dc amplifier, V9. C5 and C6 are phase compensating components to prevent oscillations.

The reference voltage is supplied by voltage regulator tube V8, which is energized by the auxiliary dc source consisting of V4, L1, C2 and R6. The voltage divider across the reference tubes is used to adjust the output voltage of the power supply. The output of the first amplifier, V9, is fed to the second amplifier V3 which is a high voltage pentode, capable of handling a

Section III, cont.

a plate voltage equal to the output of the supply. This tube, in turn, controls the "storage" voltage across the "series" tube, V2.

* *

SECTION IV - OPERATING INSTRUCTIONS

A: MECHANICAL:

1: Check the unit carefully for any damage which may have occurred in shipment.

2: Ascertain that all tubes are properly installed.

3: Check all resistors' values, in the high voltage circuits. Refer to drawing β-c-255-3(a), for component values.

B: ELECTRICAL:

1: Ground the power supply cabinet at the binding post on the rear of the chassis.

2: Check that an external interlock, closed in the SAFE position, is connected to pins "a" and "d" of the plug that mates with the socket on the chassis rear, labelled FOR EXTERNAL INTERLOCK.

3: Connect the output cable to the load.

4: Energize the power supply by means of the line cord provided for this purpose.

5: Set the high voltage control to its minimum, most counter-clockwise position.

6: Throw the MAIN POWER switch to ON and allow about 10 seconds for warm-up.

7: Depress the HIGH VOLTAGE ON pushbutton.

8: Vary the HIGH VOLTAGE CONTROL until the desired output voltage and/or current is obtained.

9: To turn off, lower the OUTPUT VOLTAGE CONTROL to minimum, and then depress the HIGH VOLTAGE OFF pushbutton. (In an emergency, depress the OFF pushbutton immediately.)

10: In case an OVERLOAD occurs, depress the HIGH VOLTAGE OFF & OVERLOAD RESET pushbutton, and proceed as in steps 5, 7 and 8 above.

* *

SECTION V - IMPORTANT PRECAUTIONS

1: ALWAYS OPERATE WITH A GOOD EXTERNAL GROUND, at least #12 gauge. A bare wire is recommended.

2: Keep all operating personnel away from the output lead, at least ONE foot.

* *

SECTION VI - - - DRAWINGS

The following drawings are provided with this manual, in addition to the component symbols, in the standard parts specification booklet:

1: β-b-255-1-(a), a complete schematic circuit diagram showing all circuit components. The power and high voltage dc circuits are indicated with heavy lines.

2: β-a-255-2-(a), showing parts placement on the control panel and chassis, and in the high voltage section.

3: β-c-255-3-(a), a schematic wiring diagram of the entire power supply. This is a point-to-point wiring diagram, indicating that all wires are number coded for ease of trouble shooting and component isolation.

* *

"TIME DELAY ON"
"DOOR INTERLOCK OPEN"
"EXTERNAL INTERLOCK OPEN"
"HIGH VOLTAGE TRANSFORMER INPUT FUSE"
"CONTROL AND FILAMENT POWER"
"HIGH VOLTAGE OFF OVERLOAD RESET"
"HIGH VOLTAGE ON"
"115 VOLTS AC INPUT"
"MAIN FUSES"
"AUX. 115 VOLTS AC OUTLET"
"OFF" "ON"
GREEN
OVERLOAD
"FOR EXTERNAL INTERLOCK"
INTERLOCKED WITH DOOR
"HIGH VOLTAGE CONTROL" (INSULATED SHAFT)
"REVERSIBLE HIGH VOLTAGE POLARITY"
"OUTPUT VOLTAGE"
"METER POLARITY SELECTOR"
"OUTPUT CURRENT"
"ALWAYS OPERATE WITH GOOD EXTERNAL GROUND"
OVERLOAD RELAY

J1 J2 I1 I2 F1 F2 S1 R1 R2 I3 I10 4a K4 R20 I4 S2 R18 I5 J3 R19 3b S3 2a 3a I6 YELLOW R3 K3 1a S4 K1 I8 F3 I7 RED R4

T1 T2 T3 V1 V2 V3 V4 V5 V6 V7 V8 V9 C1 C2a C2b C3 C4 C5 C6a C6b L1 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R21a R21b I9 P1 P2 J4 J5 K2 S5 M1 M2 BP1 BP2

Y Y N N X XM MZ Z

6BG6 6BG6 5V4 5Y3 6X2

5150 4600 3000 3000 183 183 185 185

NOTE:
DATA TAKEN WITH 117 VOLT LINE
OUTPUT VOLTAGE SET TO 3KV
HIGH VOLTAGE POSITIVE (+)
VOLTAGE MEASURED WITH TRIPLETT MODEL 630 - (20,000 OHMS/VOLT) MULTITESTER
VERTICAL = DATA AT NO LOAD
ITALICS = DATA AT 5 MA
ALL VOLTAGES TAKEN WITH RESPECT TO GROUND (FRAME).

NO.	REVISION	BY	DATE

SCHEMATIC CIRCUIT DIAGRAM

DIMENSIONS IN INCHES DO NOT SCALE
DRAWN BY J.V. 9/14/54
CHECKED BY S.S. 11/12/54
APPR'D BY

BETA ELECTRIC CORP.
NEW YORK 29, N. Y.

255-1(a)
b

NO.	REVISION	BY	DATE

PARTS PLACEMENT

DIMENSIONS IN INCHES
DO NOT SCALE

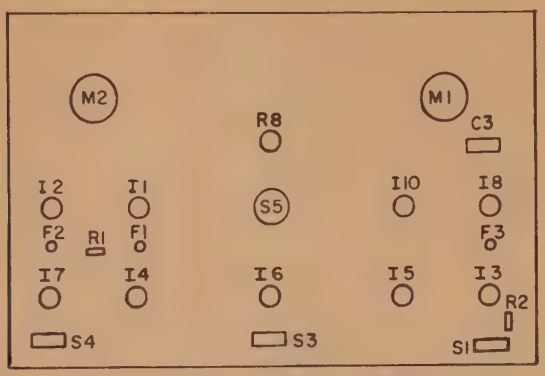
DRAWN BY J.V. 10/20/54

CHECKED BY S.S. 11/12/54

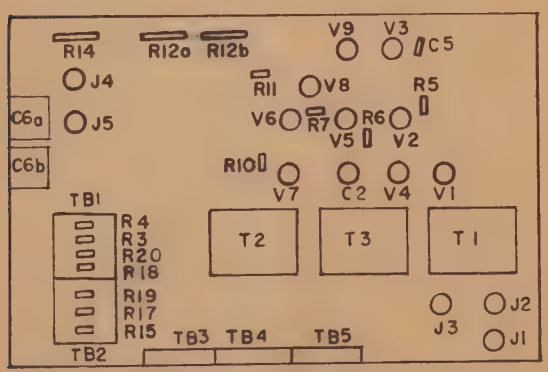
APPR'D BY

BETA ELECTRIC CORP.
NEW YORK 29, N. Y.

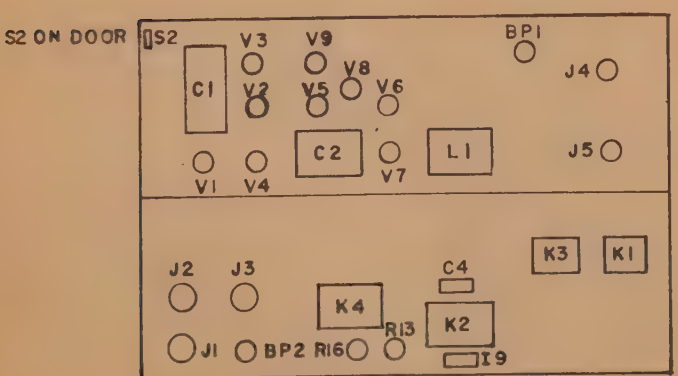
255-2 (a)



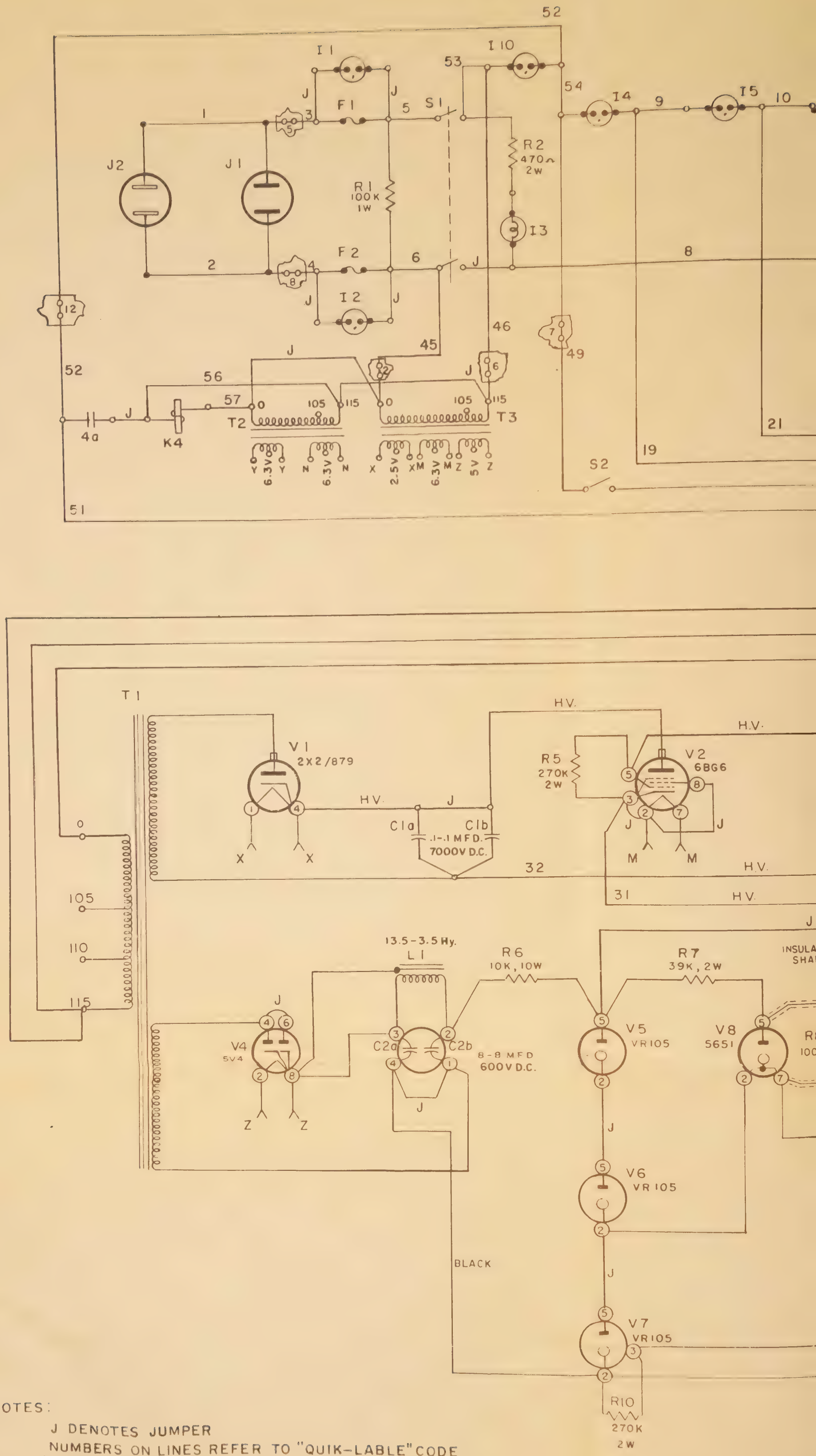
REAR VIEW OF PANEL



FRONT INTERIOR VIEW OF CABINET



REAR VIEW OF CABINET



NOTES:

J DENOTES JUMPER

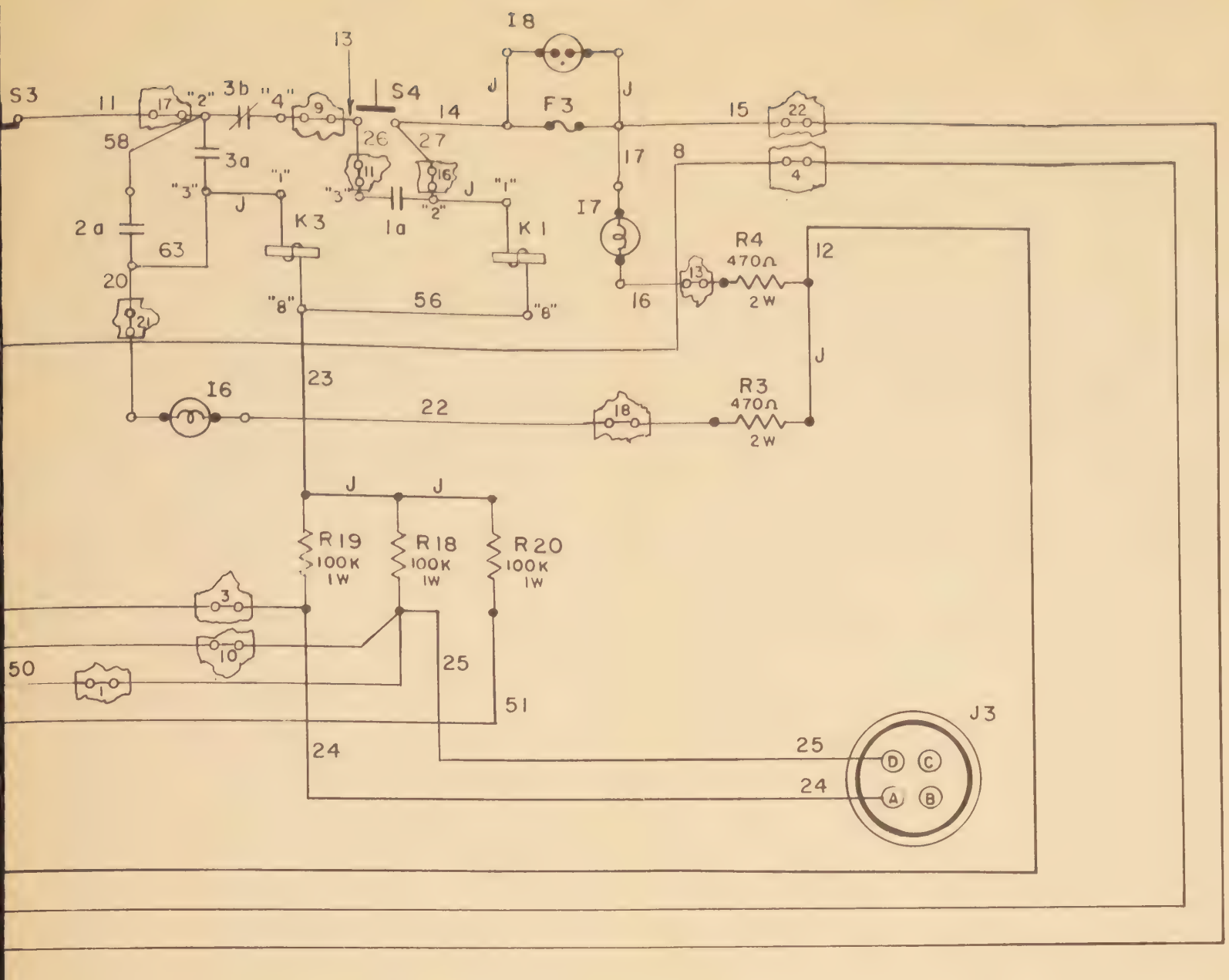
NUMBERS ON LINES REFER TO "QUIK-LABLE" CODE MARKERS ON EACH END OF ACTUAL WIRES

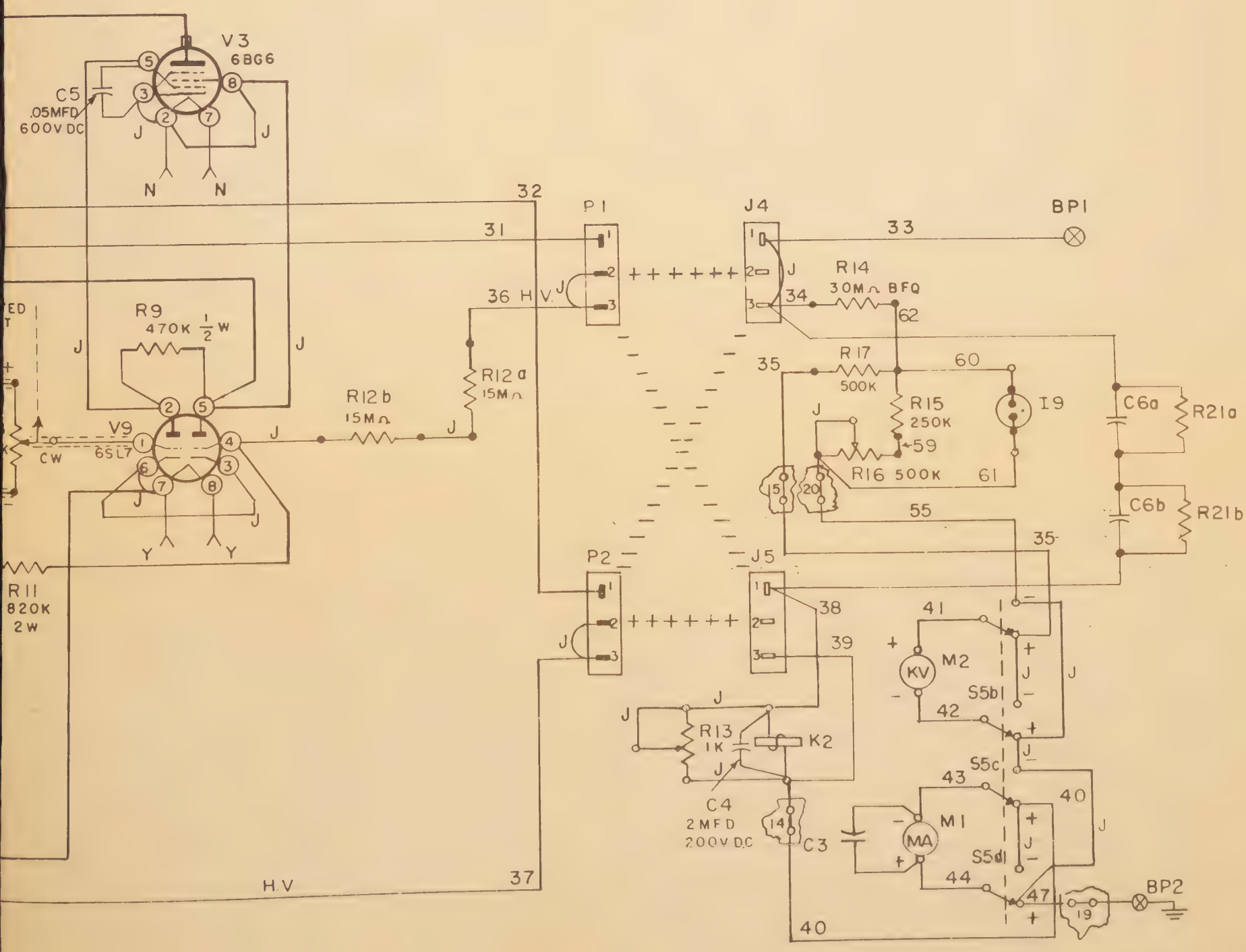
WIRE GAUGE #16

LAST NUMBER: 63

H.V. DENOTES HIGH VOLTAGE INSULATED WIRE

DENOTES TERMINAL BOARD





NO.	REVISION	BY	DATE

SCHEMATIC WIRING DIAGRAM

DIMENSIONS IN INCHES
DO NOT SCALE

DRAWN BY F C 9/14/54

CHECKED BY S. S. 11/12/54

APPR'D BY

BETA ELECTRIC CORP.
NEW YORK 29, N. Y.

BC 255-3(a)

Parts List
Model 255(a) Power Supply -1-

Beta Electric Corp.
New York 29, N.Y.

PART NO.	BETA CODE NO. AND DESCRIPTION	LOCATION	FUNCTION
A1	2A Premier Model DCR-170.		Houses components.
A2	20A Premier Model ARP-1719.	Cabinet	Mounts control components.
A3	54A 18 x 18 x 1/2" glastic. Vertical chassis.	Cabinet	Mounts rectifier & regulator components.
C1	0.1-0.1 µfd, 7,000 V dc Pyranol Capacitor, General Electric #25 F 774.	Chassis	Filter.
C2	13C	Chassis	Filter.
C3	500 µfd, 25 V dc electrolytic capacitor, Cornell-Dubilier #BRH 255.	Panel	Milliammeter surge protector.
C4	2 mfd, 200 V dc, Aerovox, Aerolite type P82.	Chassis	Surge suppressor.
C5	.05 mfd, 600 V dc.	Chassis	RF suppressor.
C6*	See bottom of page.		
F1,2	1F 4 amperes.	Panel	As labelled.
F3	1F 4 amperes.	Panel	As labelled.
I1,2	1I	Panel	Blown fuse indicator.
I3	2I	Panel	Indicates as labelled.
I4,5	1I	Panel	Indicates as labelled.
I6	2I	Panel	Indicates as labelled.
I7	2I	Panel	Indicates as labelled.
I8	1I	Panel	Blown fuse indicator.
I9	4I	Chassis	Meter protector.
I10	1I	Panel	Indicates as labelled.
J1	100J	Cabinet	As labelled.
J2	101J	Cabinet	As labelled.
J3	2J	Chassis	As labelled.
J4,5	Receptacle, 3 contacts, 10A at 730 V ac, Cinch Jones #S-303-FP.	Chassis	Polarity reversing receptacles.
K1	6K	Chassis	High voltage on holding relay.
K2	12K	Chassis	Overload relay.
K3	6K	Chassis	Overload holding relay.
L1	13.5-3.5 hy at 15-150 ma; 150 ohms reactor, 2000 V rms insulation, Stancor C-1718.	Chassis	Filter.
M1	0-5 ma dc milliammeter, square bakelite case; Simpson Model 29.	Panel	Indicates as labelled.
M2	1M dial labelled 0-3 kv dc.	Panel	Indicates as labelled.
P1,2	Plug, 3 contacts, 10A at 730 V rms, Cinch Jones #S-303-CCT.	Cabinet	Polarity reversing plugs.
* C6	1 mfd, 2000 V dc, Cornell Dubilier #TJU 20010GNCO.	Cabinet	Filter.

PART NO.	βETA CODE.NO. AND DESCRIPTION	LOCATION	FUNCTION
R1	1R 100k/10/1	Panel	Neon pilot light return current path.
R2	1R 470/10/2	Panel	Ballast.
R3	1R 470/10/2	Chassis	Ballast.
R4	1R 470/10/2	Chassis	Ballast.
R5	1R 270k/10/2	Chassis	Plate load resistor.
R6	6R 10k 10	Chassis	VR tube ballast.
R7	1R 39k/10/2	Chassis	VR tube ballast.
R8	100 k ohms, 1/2W potentiometer with high voltage coupler, Clarostat M-49-S.	Panel	As labelled.
R9	1R 470k/10/ 1/2	Chassis	Plate load resistor.
R10	1R 270k/10/2	Chassis	Cathode resistor.
R11	1R 820k/10/2	Chassis	Grid leak resistor.
R12a,b	7R 15M/2/ 1/2	Chassis	Feedback multiplier.
R13	10R 1K W2	Chassis	Overload calibrator.
R14	4R 30 BFQ 15	Chassis	Kilovoltmeter multiplier.
R15	2R 250 k	Chassis	Coarse calibrator for M2.
R16	10R 500 k C 1	Chassis	Fine calibrator for M2.
R17	2R 500 k	Chassis	Fires I9 at exc. M2 current.
R18-20	1R 100k/10/1	Panel	Neon pilot light return current path.
R21a,b	4R 10 BBF 15	Cabinet	Voltage equalizing resistors.
S1	4S	Panel	Controls as labelled.
S2	1S	Chassis	Door interlock.
S3	Momentary pushbutton switch, 1NO, 1NC 15 A at 125 V ac, red. Square D Class 9001, type G03.	Panel	Controls as labelled.
S4	Momentary pushbutton switch, 1NO, 1NC, 15A at 125 V ac black, Square D class 9001, type G01.	Panel	Controls as labelled.
S5	8S	Panel	Controls as labelled.
T1	Power transformer, 115 V ac input, dual secondary: 3500 V ac at 10 ma dc; 350 V at 30 ma dc. 5 kv dc insulation between windings and to ground. βeta #25541.	Chassis	Plate transformer.
T2	Filament transformer, 105-115 V ac input, dual secondary: 613 V ct at 5A, 6.3 V ct at 5A, 3000 V insulation, UTC #S-70.	Chassis	Filament transformer.
T3	Filament transformer, 105-155 V ac input; three secondaries: 2.5 V ct at 5A; 5 Vct at 4A; 6.3 V ct at 3A; 3000 V insulation; UTC #S-65.	Chassis	Filament transformer.

PART NO.	BETA CODE NO. AND DESCRIPTION	LOCATION	FUNCTION
V1	1V filament 2.5 V, 1.75 A Average plate current 7.5 ma inverse peak 12,500 V, RCA 2X2/879.	Chassis	Rectifier.
V2	Beam power amplifier, filaments: 6.3 V, 0.9A; 100 ma dc plate current; RCA 6BQ6-G.	Chassis	Series regulator.
V3	As above.	Chassis	Final amplifier.
V4	1V filament: 5V, 2A, Average plate current 175 ma; inverse peak 1400 V, RCA 5V4-G.	Chassis	Rectifier.
V5-7	Voltage regulator, 105 V dc operating voltage; RCA 0C3/VR-105.	Chassis	Voltage regulator.
V8	Voltage reference tube 82-92 V dc operating voltage; RCA 5651.	Chassis	Reference tube.
V9	Twin triode amplifier filaments: 6.3 V, 0.3A, RCA 6SL7-GT.	Chassis	Amplifier.
XF1-3	1XF	Chassis	Hold respective fuses.
XI1,2	1XI	Panel	Hold respective pilot lights.
XI3	4XI green jewel	Panel	As above.
XI4,5	1XI	Panel	As above.
XI6	4XI yellow jewel	Panel	As above.
XI7	4XI red jewel	Panel	As above.
XI8	1XI	Panel	As above.
XI9	5XI	Chassis	As above.
XI10	5XI	Panel	As above.
XV1	4XV	Chassis	Holds respective tube.
XV2,3	2XV	Chassis	As above.
XV4	2XV	Chassis	As above.
XV5-7	2XV	Chassis	As above.
XV8	9XV	Chassis	As above.
XV9	2XV	Chassis	As above.
TB1,2	3TB	Chassis	Mount resistors.
TB3,4	1TB 10-141.	Chassis	Circuit tie points.
TB5	1TB 2-141	Chassis	Circuit tie points.
BP1	103J	Chassis	High voltage output.
BP2	102J	Chassis	As labelled.

BETA ELECTRIC CORP.

NEW YORK 29, N. Y.

This booklet contains standard symbols, letter nomenclature and detailed specifications of parts used in Beta Electric Corp. high voltage power supplies and other equipment.

In the parts list accompanying this instruction manual there are Beta code numbers for various circuit and structural components. The detailed specifications are contained in this booklet, and can be found under the proper code number heading.

The parts are listed numerically and alphabetically according to letter nomenclature.

In the parts list, detailed specifications are included only for those components that are not listed in the booklet.

OCTOBER, 1953

C CAPACITOR

E SPARK GAP

E STANDOFF INSULATOR

F FUSE

I NEON GLOW LAMP

I INCANDESCENT LAMP

J 2-POLE MALE RECEPTACLE

J 2-POLE FEMALE RECEPTACLE

J 3-POLE MALE RECEPTACLE

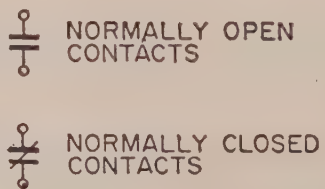
J BANANA JACK; BINDING POST

J

"AN" RECEPTACLE

J PHONE JACK

K RELAY



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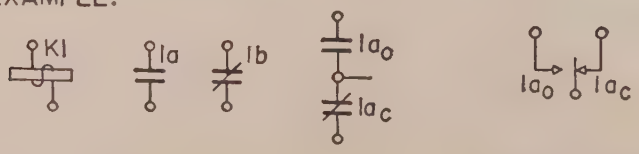
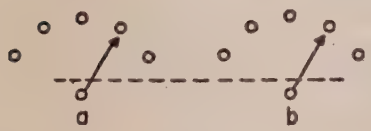


K SOLENOID RELAY

L		FILTER CHOKE
M		METER
P		BANANA PLUG
R		RESISTOR
R		POTENTIOMETER, RHEOSTAT
S		PUSHBUTTON SWITCH, NORMALLY CLOSED
S		PUSHBUTTON SWITCH, NORMALLY OPEN
S		TOGGLE SWITCH, MICRO-SWITCH, ETC., ROTARY SNAP SWITCH, ETC.,
S		ROTARY SELECTOR SWITCH, GANGED
T		TRANSFORMER
		COVAT
T		AUTO TRANSFORMER
W		INDICATES SHIELDED WIRE
W		WIRING TERMINAL
W		PHYSICAL CONNECTION (SOLDER, ETC.)

NOTE:
MANY SELF-EXPLANATORY SYMBOLS SUCH AS RECTIFIERS, AMPLIFIER TUBES, ETC., ARE NOT INCLUDED HEREIN.

The following is an excerpt from 16B16(RE) 1 July 1946, the Bureau of Ships Interim Specification for Instruction Books for ELECTRONIC EQUIPMENT, par. Eli:

STANDARD COMPONENT DESIGNATIONS

SYMBOL	DEFINITION
A	Structural parts, panels, frames, castings, etc.
B	Motors and prime movers, self-synchronous motors, etc.
C	Capacitors of all types.
D	Dynamotors, rotary converters.
E	Miscellaneous electrical parts: insulators, knobs, brushes, antennas, etc.
F	Fuses.
G	Generators, exciters, etc.
H	Hardware, screws, bolts, studs, pins, etc.
I	Indicating devices, (except meters and thermometers), pilot lamps, etc.
J	Jacks and receptacles (fixed connectors, male or female).
K	Contactors, relays.
L	Inductors, r.f. and a.f.
M	Meters of all types, gauges, thermometers, etc.
O	Mechanical parts: bearings, shafts, couplings, gears, etc.
P	Plugs (movable connectors, male or female).
Q	Diaphragms (microphone, telephone, projector, etc.).
R	Resistors, fixed and variable, potentiometers, attenuators, etc.
S	Switches, interlocks, thermostats, thermo-regulators.
T	Transformers, r.f., a.f., and power.
U	Hydraulic parts.
V	Vacuum and gaseous discharge tubes.
W	Wires, interconnecting cables, etc., wave guides, transmission lines, delay lines.
X	Sockets (electron tubes, pilot lamps, fuses, etc.) *
Y	Mechanical oscillators, crystals, magnetostriction tubes, etc.
Z	Filters, i-f transformers, compound tuned circuit assemblies, etc., in a common container.
BT	Batteries.
CR	Rectifiers (electrochemical, copper oxide, selenium, crystal, etc., except vacuum or gaseous tubes).
HS	Handset (telephone and microphone combination).
HR	Heater.
HT	Head telephones.
HX	Heat exchangers.
LS	Loudspeakers.
MG	Motor generators (single unit).
MI	Microphones (hand or chest set type).
TB	Terminal boards.
TY	Surge eliminators (special discharge resistors).
VR	Voltage regulators (except vacuum or gaseous tubes).

*The symbol designation for sockets shall bear the same basic number as for the associated component. To accomplish this, the appropriate symbol letter shall be prefixed with the letter "X", e.g., use "XV" for tube sockets, "XI" for pilot lamps' sockets, etc.

STANDARD PARTS LIST FOR INSTRUCTION MANUALS

(Note: Wherever "ac" is specified, this implies 50/60 cycle rating.)

Item number and letter designation	Type of component	DESCRIPTION
1A	Cabinet, relay rack	Relay rack cabinet for standard 19″ panels with "W.E. notching." 22″ wide x 18″ deep; black wrinkle finish; all welded construction, rounded corners. Per Premier Metal Products Co. series R units; or Par-Metal Products Corp. series ER. Number after 1A designates nominal panel space. EXAMPLE: 1A-36—¾ = Premier Model R3619, cabinet as above, with 36 ¾″ panel space. With letter G as suffix, paint is grey wrinkle. EXAMPLE: 1A-36—¾G.
2A	Cabinet, desk panel	Desk panel cabinet for standard 19″ panels with "W.E. notching." 22″ wide x 18″ deep; black wrinkle finish; all welded construction, rounded corners, Per Premier Metal Products Co. series DCR units, or Par-Metal Products Corp. series DL. Number after 2A designates nominal panel space, EXAMPLE: 2A-8—¾ = Premier Model DCR8, cabinet as above, with 8¾″ panel space. With letter G as suffix, paint is grey wrinkle, EXAMPLE: 2A-8—¾G.
3A	Cabinet or Housing, metal	Any metal housing, other than an oil filled tank, or standard cabinet per 1A and 2A. Number after 3A designated βeta drawing number, EXAMPLE: 3A-β-c-201A2 = cabinet for series 201 power supplies.
10A	Chassis	Standard chassis, #16 gauge. Numbers after 10A designate height, length and width; construction per Premier Metal Products series CH, or Par Metal type C. EXAMPLE: 10A-3X17X10 = Chassis, 16 gauge, black wrinkle finish, 3″ high, 17″ long, 10″ wide, Premier #CH415. Standard color is black wrinkle. Suffix "G" represents gray wrinkle. Suffix "GH" represents gray hammertone. Suffix "Z" represents zinc plated.
11A	Chassis	Any chassis other than standard chassis per 10A. Number after 11A designates βeta drawing Number, EXAMPLE: 11A-β-c-A103 = Chassis with integral mounting brackets, 17″ x 10″ x 2″, as per drawing β-c-A-103. Standard color, see 10A.
20A	Panel	Aluminum panel, with standard "W.E. notching," 19″ wide, ⅛″ thick, Par-Metal series 6675 — 6686, or Premier Metal series ARP. Number after 20A designates nominal height, and finish. EXAMPLE: 20A-21B = Aluminum panel 19″ wide, ⅛″ thick, 21″ high, black wrinkle finish, Premier ARP 2119,B. 20A-21G = Aluminum panel 19″ wide, ⅛″ thick, 21″ high, grey wrinkle finish, Par Metal G-6686. 20A-19GH = Aluminum panel 19″ wide, ⅛″ thick, 19″ high, grey hammertone, Premier ARP-1919, with special finish.

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Item number and letter designation	Type of component	DESCRIPTION
21A	Panel	Steel panels, per 20A specifications.
22A	Panel	Any metal panel other than panels included in 20A and 21A. Number after 22A designates βeta drawing number, EXAMPLE: 22A-β-c-701-CP2 = special panel for βeta model 701 Portable Projection Oscilloscope, dwg. β-c-701-CP2.
23A	Panel	Bakelite panel, fabricated to βeta specifications. Number after 23A designates βeta drawing number, EXAMPLE: 23A-β-a-101A1 = Bakelite panel for Model 101 and 102 kilovoltmeters, per dwg. β-a-101-A1.
30A	Tank and cover	Complete tank and cover assembly. Number after 30A designates βeta drawing number. EXAMPLE: 30A-β-c-2010-A1, A2 = tank, frame and cover assembly for model 2010 power supply, per dwgs. βc-2010-A1, A2.
31A	Frame	Frame assembly. Number after 31A designates βeta dwg. No.
50A	Potting Can	Potting can, fabricated to βeta specifications. Number after 50A designates βeta drawing number. EXAMPLE: 50A-β-a-A-102-224-1 = Potting can for model 224 power supply, per dwg. β-a-A-102-224-1.
51A	Housing	Output shorting mechanism housing, fabricated to βeta specifications. Number after 51A designates βeta drawing number. EXAMPLE: 51A-β-a-105 = Output shorting mechanism housing per dwg. β-a-A-105.
52A	Lucite	Fabricated lucite, to βeta specifications. Number after 52A designates βeta drawing number, EXAMPLE: 52A-β-a-A-104 = Lucite box as per dwg. β-a-A-104.
53A	Bakelite	Fabricated bakelite, specifications per 52A.
54A	Glastic	Fabricated glastic, specifications per 52A.
55A	Formica	Fabricated formica, specifications per 52A.
56A	Roller assembly	Roller truck assembly for standard 22″ width cabinet. Premier Metal Products Co. or Par Metal RT series. Number after 56A designates nominal depth of cabinet it supports, EXAMPLE: 56A-18½ = Roller truck assembly, 22″ wide, 18½″ deep. Premier RT 1101.
57A	Chassis brackets	Chassis brackets, 16 gauge, black finish. Premier Metal CB or Par Metal SB series. Number after 57A designates length of base, EXAMPLE: 57A-8 = Chassis brackets 8″ long, Premier CB-78, or equivalent.
58A	Chassis brackets	Special chassis brackets, fabricated to βeta specifications. Number after 58A designates βeta drawing number.

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Item number and letter designation	Type of component	DESCRIPTION
59A	Distribution Box	Distribution box, fabricated to βeta specifications. EXAMPLE: 59A-β-b-A-114 — Distribution box as per βeta dwg. β-b-A114.
1B	Motor	1/150 HP; 2000 RPM; 200/1 speed reducer, output shaft speed 10 RPM. 75V DC, shunt wound motor; Bodine #NSH-11R.
2B	Motor	1/40 HP; 1725 RPM; 115 V ac, split phase, reversible.
1C	Capacitor	0.001 mfd, 60 kv dc; glass tubular; βeta #201021.
2C	Capacitor	0.002 mfd, 20 kv dc, glass tubular.
3C	Capacitor	0.005 mfd, 10 kv dc, glass tubular.
4C	Capacitor	0.006 mfd, 75 kv dc; βeta #21728.
5C	Capacitor	0.007-0.007 mfd, 11 kv dc; 1 terminal 11 kv; 1 terminal 22 kv; βeta #00221.
6C	Capacitor	0.008 mfd, 60 kv dc; βeta #21727.
7C	Capacitor	0.01 mfd, 400 V dc; paper; Micamold #339 BR 110, or equivalent.
8C	Capacitor	0.01-0.01 mfd, 16 kv dc; 1 terminal 16 kv; 1 terminal 32 kv. βeta #20123.
9C	Capacitor	0.02 mfd, 30 kv dc; βeta 21723.
10C	Capacitor	0.25 mfd, 400 V dc; paper; Cornell-Dubilier #PJ4P25, or equivalent.
11C	Capacitor	1 mfd, 400 V dc, paper, "bathtub", side terminals. Aerovox type 30, or equivalent.
12C	Capacitor	2 mfd, 200 V dc; metallized paper; Aerovox P82 or equivalent.
13C	Capacitor	8-8 mfd, 600 V dc; paper, Tobe-Deutschmann Corp., "Filtermite," type PT-SC-11; 4 pin plug-in base.
14C	Capacitor	20 mfd, 150 V dc, dry electrolytic; Aerovox PRS, or equivalent.
15C	Capacitor	100 mfd, 50 V dc, dry electrolytic; Sangamo MTH-5010 or equivalent.
1E	Shield	Anti-corona tube socket shield, open end type. βeta #ACS-1.
2E	Shield	Anti-corona tube socket shield, fully enclosed type. βeta #2010-E-1.
3E	Tube Shield	Miniature Amphenol #5-508, or equivalent.
4E	Shield	Rubber shield for battery clip. For Mueller #27 clip. Red or black. Indicate R or B after 4E.
5E	Shield	Rubber shield for battery clip. For Mueller #29 clip. Red or black. Indicate R or B after 5E.

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Item number and letter designation	Type of component	DESCRIPTION
		NOTE: 100E — 109E All bakelite; black, shiny, grade XX, unless otherwise noted.
100E	Bakelite	Rod, by diameter. EXAMPLE: 100E ½ = ½" diameter black, shiny, grade XX bakelite rod.
101E	Bakelite	Bakelite sheet, by thickness.
102E	Bakelite	Bakelite tube, by outside diameter and inside diameter.
110E - 119E		NOTE: ALL LUCITE; clear, transparent, unless otherwise noted.
110E	Lucite	Lucite rod, by diameter.
111E	Lucite	Lucite sheet, by thickness.
112E	Lucite	Lucite tube, by outer diameter and inner diameter.
120E - 129E		NOTE: ALL GLASTIC, type MM, unless otherwise noted.
120E	Glastic	Glastic rod, by diameter.
121E	Glastic	Glastic sheet, by thickness.
130E - 139E		NOTE: ALL FORMICA, types as noted.
130E	Formica	Formica rod, by diameter.
131E	Formica	Formica sheet, by thickness.
300E	Bushing	All Heyman Manufacturing Co., nylon strain relief bushings, series SR-P. Number after 300E designates Heyman number. EXAMPLE: 300E-2 = Heyman SR2P bushing.
301E	Bushing	All Insuline Corp. of America bakelite feed-through bushings, Series 600. Number after 301E designates ICA number. EXAMPLE: 301E-8 = ICA #608, with 13/32 hole.
302E	Bushing	Feedthrough bushing 9 kv, 45 A rating. Heldor #875A, style 5.
303E	Bushing	Feedthrough bushing 55 kv, 50 A rating. Heldor #2625-1, style 10.
304E	Bushing	Lucite feedthrough bushing with nut. ½" O.D., ⅛" hole diameter. Bud #457.
305E	Bushing	Porcelain feedthrough bushing. ⅞" panel hole, for ⅜" panel thickness. 7/16" hole size. Universal Clay Products #PB-3.
306E	Standoff	Steatite standoff insulator; ½" diameter, #8 thread on both ends. Birnbach Radio Co. Series 443. Number after 306E denotes standoff height. EXAMPLE: 306E-½ = ½" standoff, Birnbach #443.
307E	Standoff	Steatite standoff bushing, 4½" high, 2¼ x 2¼" base, with Birnbach jack #395 on top. Birnbach assembly #4451J.

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Item number and letter designation	Type of component	DESCRIPTION
402E	Knob	1" round black melamine knob; shaft diameter ¼". Kurz-Kasch #S-308-64-BB-DD.
403E	Knob	ICA #1274S, pointed.
407E	Pushbutton	Pushbutton for Arrow-Hart & Hegeman pushbutton switch 3392A, βeta code #5S. AH&H #3391-194. 407E B = Black; 407E R = Red.
		NOTE: In fuse specifications, number after letters represents current rating. EXAMPLE: 2F 10 = Fuse with specifications per 2F, 10 amperes rating.
1F	Fuse	Extractor post cartridge fuse, quick acting type. 250 volts ac rating. Littelfuse type 3AG or equivalent (fuse ratings 1/16 to 6 amperes).
2F	Fuse	Extractor post cartridge fuse, quick acting type. 250 volts ac rating. Littelfuse type 3AB or equivalent. (Fuse ratings 8 to 20 amperes.)
3F	Fuse	Extractor post cartridge fuse, quick acting type. 250 volts ac rating. Bussman type BAF or equivalent. (Fuse ratings 10 to 30 amperes.)
4F	Fuse	Extractor post cartridge fuse, "slo-blo" type. 125 volts ac rating. Littelfuse type 3AG "slo-blo," series 313, or equivalent. (Fuse ratings 1/100 to rating:
5F	Fuse	Plug type fuse, standard Edison Screw Base, transparent top. General Electric type PY, or equivalent. 125 volts ac rating. (Fuse ratings 3 to 30 amperes.)
6F	Fuse	Enclosed, 1 time cartridge fuse. 250 volts ac, 3 to 60 amperes rating. General Electric type GF4A, or equivalent.
40H	Cable clamp	For high voltage cable, per dwg. β-HVCC-3. Number following H represents RG cable number that clamp fits. EXAMPLE: 40H 8 = clamp per above specifications for RG 8U cable.
41H	Cable clamp	Plastic, Ethyloc Plastic Cable clips, type 6R, series CPC-742. Number following H is nominal diameter of cable that is clamped. EXAMPLE: 41H ⅛ = Clamp per above specifications, for ⅛" diameter cable. Ethyloc plastic type 6R.
42H	Clamp	Cable; Aluminum, neoprene coated; Specify by nominal diameter; ADEL series 742, or equivalent.
43H	Tube clamp	Birtcher Series 926. Number following H represents nominal tube base diameter. EXAMPLE: 43H 1 ⅛ = Birtcher #926B, for 1⅛" tube base.
44H	Cable clamp	For AN type connector. Number after H designates AN 3057 designation. EXAMPLE: 44H 6 = AN 3057-6 cable clamp.

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Item number and letter designation	Type of component	DESCRIPTION
45H	Mounting clamp	Steel, cadmium plated circular clamp, usually associated with electrolytic capacitor mounting applications. Cornell Dubilier series 1300-1800, and Mallory series VR, or equivalent. Number after H designates nominal diameter of clamps. EXAMPLE: 45H 5/8 = clamp for 5/8" diameter. Cornell Dubilier #17920, or equivalent.
51H	Bracket	Angle, steel, nickel plated. American Radio Hardware Co., Specify by ARHCO. # EXAMPLE: 51H6 = ARHCO #BKA-06.
60H	Neoprene	Gasket material, by thickness.
61H	Garlock 662	Gasket material, by thickness.
62H	Gasket	Neoprene, for H.V. cable clamp, by cable size, per dwg. β-a-HVCC-4.
70H	Hole plugs	Non-ventilating, by diameter. Cinch-Jones series 141, or equivalent.
71H	Hole plugs	Ventilating, by diameter. Cinch-Jones 41V, or equivalent.
72H	Spacers	Metal spacers, 3/8" OD, #8 hole; ICA series 5764 through 68, or equivalent. Number after H represents length. EXAMPLE: 62H1 = Spacer 1" long per above, ICA #5768.
73H	Feet	Rubber, 7/8" diameter with #10-32 x 1/2" stud. Miller Products Co. #2102, or equivalent.
74H	Feet	Rubber foot; molded; #MB50, Miller Products.
75H	Shock mounts	#10; base 2 1/2" sq., 1/4" mtg. hole. U.S. Rubber Co. #5150, or equivalent.
76H	Handle	Stanley #482J, Number 2; unpainted; letter after H represents color, if any.
77H	Handle	Carrying; 4 1/2", Precision Metal Products #2102, with mating end ferrule #2105.
78H	Handle	Leather carrying handle.
1I	Lamp	Neon glow lamp, 117 volts (Nominal); 1/25 watt, Miniature bayonet base; NE-51, T-3 1/4 bulb. (Requires external resistor.)
2I	Lamp	Incandescent pilot lamp; #6S6; 115 V; 6 watts; Candelabra base; S6 bulb.
3I	Lamp	Incandescent lamp; standard Edison screw base. Numbers after I represent voltage and wattage rating. EXAMPLE: 3I 115 — 100 = 115 volt, 100 watt lamp, per above.
4I	Lamp	Neon glow lamp, 117 volts (nominal); 1 watt, double contact bayonet candelabra base; NE-32, G-10 bulb. (Requires external resistor.)

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Item number and letter designation	Type of component	DESCRIPTION
5I	Lamp	Incandescent pilot lamp miniature bayonet base; 6-8 volts, 0.15 amperes, brown bead. Bulb #T-3 ¼. GE #47, or equivalent.
1J - 99J		NOTE: Any receptacle in this grouping mates with the corresponding numbered plug in the P Grouping.
1J	Receptacle	1 contact, AN 3102-24-835S; mates with 1P; (AN3106-24-835P)
2J	Receptacle	4 contacts, AN 3102-14S-2S; mates with 2P; (AN3106-14S-2P)
3J	Receptacle	4 contacts, AN 3102-18-4S; mates with 3P; (AN3106-18-4P)
4J	Receptacle	8 contacts, AN 3102-22-18P; mates with 4P; (AN3106-22-18S)
5J	Receptacle	8 contacts, AN 3102-22-18S; mates with 5P; (AN3106-22-18P)
6J	Receptacle	12 contacts, AN 3102-28-8P; mates with 6P; (AN3106-28-8S)
7J	Receptacle	12 contacts, AN 3102-28-8S; mates with 7P; (AN3106-28-8P)
50J	Jack	Banana; Birnbach 394 (giant); mates with 50Pa (Birnbach 396); or 50Pb (Birnbach 397).
51J	Jack	Banana; Birnbach 403 (medium); mates with 51P; (Birnbach 401.)
52J	Receptacle	Power; Hubbell Twistlock 7556; 3 pole recessed male receptacle (motor connector); 125 volts, 15 amperes; 250 volts, 10 amperes; mates with 52P; (Hubbell 7555.)
53J	Receptacle	Power; Hubbell Twistlock 7327; 3 pole recessed male receptacle (motor connector); 250 volts, 20 amperes; 575 volts, 10 amperes; mates with 53P; (Hubbell 7315.)
54J	Receptacle	Coaxial; Amphenol, AN SO-239J; mates with 54P (AN PL 257)
100J	Receptacle	Power; Amphenol 61-M10 (Male); 2 pole, standard plug, recessed male receptacle; 110 volts, 15 amperes; 250 volts, 10 amperes.
101J	Receptacle	Power, Amphenol 61-F1 (Female); 2 pole, standard flush female receptacle; 110 volts, 15 amperes; 250 volts, 10 amperes.
102J	Binding Post	Single connector, all metal; ICA type 620, or equivalent.
103J	Binding Post	Single connector, insulated; red ICA type 622, or equivalent.
104J	Binding Post	Single connector, insulated; black ICA type 623, or equivalent.
105J	Binding Post	Single connector, all metal; labelled "ground." ICA type 631, or equivalent.
106J	Binding Post	1 pole binding post; EBY #37, or equivalent.
107J	Binding Post	Single connector, 1 pole binding post, 5 way; 30 amperes, 1,000 volts insulation; red; Superior Electric Co. DF 30RC.

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Item number and letter designation	Type of component	DESCRIPTION
108J	Binding Post	Single connector, 1 pole binding post, 5 way; 30 amperes; 1,000 volts insulation; black, Superior Electric Co. DF 30 BC.
109J	Binding Post	Two connectors; National, type FWG.
110J	Binding Post	2 pole binding post, EBY #21R.
1K	Solenoid	115 volts ac coil; GE #CR 9503-208D.
2K	Solenoid	115 volts ac coil; GE #CR 9503-209C.
3K	Solenoid	115 volts ac coil; Soreng #EX-324-12100A.
4K	Solenoid	115 volts ac coil; Soreng #EX-358-12100A.
5K	Relay	115 volts ac coil; double pole, double throw, 10 amperes, 115 volts ac contacts; Leach type 1127 or equivalent.
6K	Relay	117 volts ac coil; double pole, double throw, 10 amperes, 115 volts ac contacts; Octal plug-in socket base; Advance 964B-P, or equivalent.
7K	Relay	1 milliampere dc, 2200 ohm coil; single pole, double throw, 5 amperes, 115 volt ac contacts; Advance type 1200.
8K	Relay	½ milliampere dc; 29,000 ohm coil; single pole, double throw; 110 volt ac contacts; Kurman type N220C44Y.
9K	Relay	115 volts ac coil; double pole, single throw, normally open, 15 amperes, 115 volt ac contacts; Potter-Brumfield PR7A.
10K	Relay	24 volts ac coil; double pole, single throw, normally open contacts; 15 amperes, 115 volt ac contacts; Potter-Brumfield PR7A.
11K	Relay	115 volts ac coil; double pole, double throw, 15 amperes, 115 volts ac contacts; Potter-Brumfield PR11A.
12K	Relay	½ milliampere dc; 12,000 ohm coil; single pole, double throw; 110 volt ac contacts; Kurman type BK35.
13K	Relay	24 volts ac coil; double throw, 15 amperes, 115 volts ac contacts; Potter-Brumfield PR11A.
14K	Relay	24 volts ac coil; double pole, double throw, 3 amperes, 115 volt ac contacts; Potter-Brumfield KR11A.
15K	Relay	110 volts dc coil; double pole, double throw, 8 amperes, 115 volt ac contacts, Potter-Brumfield MR11D.
16K	Relay	110 volts dc coil; single pole, double throw, 8 amperes, 115 volt ac contacts; Potter-Brumfield MR5D.
17K	Relay	115 volts ac coil; double pole, single throw, normally open, 10 amperes. 115 volt ac contacts; Time delay 5-20 second adjustable; Leach 1154-T, or equivalent.

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Item number and letter designation	Type of component	DESCRIPTION
18K	Relay	115 volts ac coil; double pole, double throw, 2 amperes, 115 volt ac contacts; Allied type BJ6A115.
19K	Relay	Balanced relay; Coil (+7.5) — (0) — (—7.5) microamperes dc; contacts single pole, double throw, 5 volts dc, 200 ma, non-inductive load; Weston #534.
20K	Relay	1.4 ma dc, 8000 ohm coil; contact rating: single pole, double throw, 2 amperes, 24 volts dc or 115 volts ac non-inductive load; Sigma type 4F.
21K	Relay	Contactor; 117 volts ac coil; double pole; normally open contacts; 115 V at 35 amperes or 220 volts at 25 amperes; Mercury contacts Ebert Model #EM4.
22K	Relay	117 volts ac coil; double pole, double throw, 5 amperes, 115 volts ac contacts; dust cover; Octal plug-in base; Potter-Brumfield #KRP-11-1832, or equivalent.
23K	Relay	1.2 ma dc, 10,000 ohm coil; SPDT, 5 amperes, 115 VAC contacts; Potter & Brumfield LM5-1136.
1M	Meter	DC microammeter; 50 microamperes full scale; 4″ square bakelite case; Simpson Model 29. Dial labelled as per parts list.
2M	Meter	DC microammeter; 50 microamperes full scale; 3″ square bakelite case; Simpson Model 27; dial labelled as per parts list.
3M	Meter	Weston Model 273 fan shaped meter. 7⅓″ scale length, 1% accuracy. See parts list for sensitivity and scale markings.
10	Caster	3″ wheel, ¼ ton swivel bearing; Darnell #3-73 TDN, neoprene covered.
20	Caster	6″ wheel, ½ ton swivel bearing; Darnell #4L06 RDN, neoprene covered.
30	Caster	4″ wheel, ¼ ton swivel bearing; Fairbanks #23-4MP. Composition.
40	Caster	6″ wheel, ½ ton swivel bearing; Fairbanks #23-6MP. Composition.
50	Reductor box	400:1 ratio; 31 inch-pounds maximum torque; Boston #LW9.
1P - 99P		NOTE: Any plug in this grouping mates with the corresponding numbered receptacle or Jack in the J grouping.
1P	Plug	1 contact, 3106-24-835P; mates with 1J.
2P	Plug	4 contact, 3106-14S-2P; mates with 2J.
3P	Plug	4 contact, 3106-18-4P; mates with 3J.
4P	Plug	8 contact, 3106-22-18S; mates with 4J.
5P	Plug	8 contact, 3106-22-18P; mates with 5J.
6P	Plug	12 contact, 3106-28-8S; mates with 6J.
7P	Plug	12 contact, 3106-28-8P; mates with 7J.

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Item number and letter designation	Type of component	DESCRIPTION
50Pa	Plug	Banana, Birnbach #396; mates with 50J.
50Pb	Plug	Banana, Birnbach #397; mates with 50J.
51P	Plug	Banana, Birnbach #401; mates with 51J.
52P	Plug	Power; Hubbell Twistlock 7555; 3 pole female connector; 125 volts, 15 amperes; 250 volts, 10 amperes; mates with 52J.
53P	Plug	Power; Hubbell Twistlock 7313; 3 pole female connector; 250 volts, 20 amperes; 575 volts, 10 amperes; mates with 53J.
54P	Plug	Amphenol, AN PL-259; mates with 54J.
100P	Tube cap	Alden 91 ISL.
101P	Tube cap	National SPP-3 steatite.
102P	Tube cap	National SPP-9 steatite.
103P	Tube cap	¾" Johnson #124-315.
104P	Clip	Alligator, standard 2" size; ARH 45 AT, or equivalent.
105P	Clip	Battery; Mueller #27.
106P	Clip	Battery; Mueller #45.
107P	Clip	Battery; Mueller #48B.
1R	Resistor	Carbon or composition resistor; by resistance, % tolerance, watts. EXAMPLE: IR 47/10/1 = 47 ohms, 10% tolerance, 1 watt. Any make, unless otherwise specified.
2R	Resistor	..... ohms, 5% tolerance, (unless otherwise indicated by - - - suffix); ½ watt, precision, composition; Continental Nobeloy type X-½. EXAMPLE: 2R 2K = 5% tolerance; 2R2K—1 = 1% tolerance; both 2,000 ohms nominal.
3R	Potentiometer	Standard linear potentiometer; wire wound or carbon; by resistance, material and wattage; nominal shaft. EXAMPLE: 3R 10W4 = 10 ohms, wire wound, 4 watts, any make.
4R	Resistor	High voltage; Resistance Products Co.; by resistance in megohms, RPC type; and tolerance. EXAMPLE: 4R 1 BFQ 15 = 1 megohm, type BFQ, 15% tolerance.

RESISTANCE PRODUCTS CO. HIGH VOLTAGE RESISTORS

TYPE	WATTS (In Air)	VOLTS
BBF	1	3,500
BBM	2	7,500
BBR	3	15,000
BBV	5	30,000
BFQ	4	15,000
BFT	6	25,000
BFW	10	40,000
DPW	20	35,000
DPX	30	65,000
DVY	50	90,000
DZW	30	40,000
DZZ	90	125,000

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Item number and letter designation	Type of component	DESCRIPTION
5R	Resistor	Matched Pairs; high voltage; Resistance Products Co.; by total matched resistance, in megohms; individual RPC number, tolerance EXAMPLE: 5R 1000 BFW 2 = Matched pair, 1000 megohms total, each resistor BFW, 2% tolerance of total resistance.
6R	Resistor	Power resistor ..... ohms, (10% tolerance unless otherwise indicated) ..... watts, all wire-wound. Any manufacturer, unless otherwise specified. EXAMPLE: 6R 1K5 = 1K ohms, 5 watts (if tolerance is other than 10% note as below. 6R 1K 5 — 1. (1%)
7R	Resistor	Precision, wire wound by resistance, precision, wattage. Any make, unless specified. EXAMPLE: 7R 2K/1/½ = Resistor, precision, wire-wound 2 K ohms, 1% tolerance, ½ watt.
8R	Resistor	Precision, composition; by resistance, precision, wattage.
9R	Resistor	High frequency, Resistance Products Co., by resistance in megohms, RPC type; and tolerance.
10R	Potentiometer	Wire wound or composition potentiometer. For calibration purposes; linear taper, with screwdriver shaft, locking control, and MINIMUM RESISTANCE of approximately 10% maximum value. Clartostat Mfg. Co. series 43, 58, etc. By resistance, material, wattage. EXAMPLE: 10R 10 K W 2 = Potentiometer, 10K, wire wound, 2 watts. 10R 1M C1 = Potentiometer, 1 megohm, composition, 1 watt.
1S	Switch	Door interlock switch; single pole, double throw, 10 amperes 115 volts contacts ac; Microswitch model 2AC1. Manually disabling, and automatic reset type.
2S	Switch	Spring leaf switch; single pole, double throw, 15 amperes, 115 volts ac contacts; Microswitch type BZ-2RL-A2.
3S	Switch	Toggle switch; double pole, single throw, 3 amperes, 125 volts, ac; screw terminals; Arrow-Hart & Hegeman #8965 or equivalent.
4S	Switch	Toggle switch; double pole, single throw, 12 amperes, 125 volt ac contact; Arrow-Hart & Hegeman #80600 or equivalent.
5S	Switch	Momentary pushbutton switch; 2 circuits; 1 — normally open, 1 — normally closed; BREAK BEFORE MAKE; 3 amperes at 125 volts ac contacts with screw terminals; Arrow-Hart & Hegeman #3392A, or equivalent.

6Sb, r	Switch	Momentary pushbutton switch; 2 circuits; 1 normally open, 1 — normally closed; BREAK BEFORE MAKE; 15 amperes at 125 volts ac contacts; GE #CR 2943-U-103C; or equivalent.
		b = black. r = red.

7S	Switch	Rotary selector switch; 2 poles, 2 to 5 positions, shorting; steatite insulation; Centralab #2504.
8S	Switch	Rotary selector switch; 4 poles, 2 to 5 positions; shorting; steatite insulation; Centralab #2514.

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Item number and letter designation	Type of component	DESCRIPTION
9S	Switch	Rotary selector switch; 4 poles, 2 to 5 positions; non-shorting; steatite insulation; Centralab #2515.
10S	Switch	Rotary snap switch; double pole, double throw; 3 amperes, 125 volts ac; with screw terminals. Arrow-Hart & Hegeman #1575, or equivalent.
11S	Switch	Rotary selector switch; ..... poles, ... positions; (shorting, non-shorting;) (ceramic, steatite) insulation. Manufacturing and number ..... (see parts list for details.)
	NOTE:	Any transformer with βeta number, ending in "0" represents the corresponding unit potted. Thus, 100T0 = transformer 100T β #20115, potted.
1T	Transformer	Non standard—βeta units. Pri: ..... volts; Sec: ..... volts; ..... amperes; Insulation rating; ..... Manufacturer's name and number ..... .
100T	Transformer	117 V primary; secondary: 2 windings; each 1.3 V at 0.3 A, or 1.6 V at 1.25a, or 2.6 V at 5A (by means of PRIMARY taps.) Each winding insulated for 30 KV DC in air. 45 KV DC potted; βeta #20115.
101T	Transformer	115/2.6, 2.6 volts at 5 amperes; each secondary winding insulated for 65 kv dc; βeta #24211, for operation under oil.
102T	Transformer	117/5 volts, 6.5 amperes; 30 kv dc insulation; βeta #24511. Air insulated.
103T	Transformer	Pri: 110/220 volts; Sec: 6.0 volts, 5 amperes, 6.0 volts, 5 amperes; one winding insulated for 150 kv dc; other winding insulated for 600 volts; βeta #201017. For operation under oil.
104T	Transformer	Pri: 110/220 volts; Sec: 6.0 volts, 4.0 amperes, 150 kv dc insulation. βeta #21313.
105T	Transformer	Pri: 110/220 volts; Sec: 6.0 volts, 4.0 amperes, 300 kv dc insulation; βeta #21314.
200T	Transformer	Pri: 105/115 volts, 50/60 cycles; Sec: 2.5 volts CT at 10 amperes, 1500 volts insulation; UTC #S-53, or equivalent.
201T	Transformer	Pri: 105/115 volts, 50/60 cycles; Sec: 2.5 volts CT at 10 amperes, 10,000 volts insulation; UTC #S-57, or equivalent.
202T	Transformer	Pri: 105/115 volts, 50/60 cycles; Sec: 2.5 volts CT at 20 amperes, 10,000 volts insulation; UTC #S-58, or equivalent.
203T	Transformer	Pri: 105/115 volts, 50/60 cycles; Sec: 5/5.25 volts CT at 22 amperes, 3,000 volts insulation; UTC #S-60, or equivalent.
204T	Transformer	Pri: 105/115 volts, 50/60 cycles; Sec: 10 volts CT at 10 amperes, 3,000 volts insulation; UTC #S-62, or equivalent.
205T	Transformer	Pri: 110/220 volts; Sec: 5 volts at 10 amperes; 60 cycles; 15 kv insulation, General Electric #7470615, or equivalent.
300T	Transformer	Primary: 115 volts; 3 secondaries: 7.5 KV at 3 MA, low end grounded; 1.3 V, 2A, low voltage insulation; 1.3 V, 2A, high voltage insulation. βeta #00111.

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301T	Transformer	Pri: 117 volts; 3 secondaries: 7.1 KV, 4 ma; start insulated for 11 KV DC. 1.3 V, 4.3A, low voltage insulation, 1.3 V, 0.3A, tied to high voltage secondary end; βeta #00311, air insulated.
302T	Transformer	117/11,500 volts at 4 ma; start of secondary insulated for 16 kv dc; βeta #20113. Air insulated.
303T	Transformer	117/22,000 volts, 8 milliamperes; start of secondary insulated for 20 kv dc air; 30 kv dc potted; 60 kv dc, oil; βeta #21714.
304T	Transformer	Pri: 110/220 volts; Sec. 44,000 volts, 8 milliamperes; start of secondary insulated for 75 kv dc. βeta #201042. For operation under oil.
305T	Transformer	Primary: 115 volts, 400 cycles; Secondary: 45 kv, 12½ milliamperes RMS, βeta #21342. Start of secondary grounded.
306T	Transformer	Primary: 105/115/125 volts, 60 cycles; Secondary 4 kv at 600 milliamperes RMS. Start of secondary insulated for 5 kv dc. βeta #204642.
400T	Transformer	Primary: 115 volts, 50/60 cycles, Secondary 1000-750-0-750-1000 volts RMS at 300 milliamperes dc. UTC #S-46, or equivalent.
401T	Transformer	Primary: 115 volts, 50/60 cycles, Secondary: 1500-1250-1000-0-1000-1250-1500 volts RMS at 300 milliamperes dc. UTC #S-47, or equivalent.
402T	Transformer	Primary: 115 volts, 50/60 cycles, Secondary: 1500-1250-1000-0-1000-1250-1500 volts RMS at 500 milliamperes dc. UTC #S-48, or equivalent.
403T	Transformer	Pri: 115 volts, 50/60 cycles, Sec: 2100-1800-1500-0-1500-1800-2100 volts RMS at 300 milliamperes dc. UTC #S-49, or equivalent.
404T	Transformer	Pri: 115 volts, 50.60 cycles, Sec: 3000-2500-0-2500-3000 volts RMS at 300 milliamperes dc. UTC #S-50, or equivalent.
500T	Covat*	Single phase, hand operated Superior Electric Co. Powerstat. Specify by Model, input voltage and output current rating. EXAMPLE: 500T20-115/3.5 = Superior Electric Co. Model 20 Powerstat. 115/0-135 volts, 3.5A.
501T	Covat	Single phase, hand operated, General Radio Co., Variac. Specify by Model, input voltage and output current rating. EXAMPLE: 501T 200B-115/1.5 = General Radio Co. Model 200-B Variac. 115/0-135V, 1.5A.
502T	Covat	Single phase, motor driven, Superior Electric Co. Powerstat. Specify by Model, input voltage and output current rating, and rise time for maximum output voltage, from zero start. EXAMPLE: 502T MZ 1156-3P-115/135-6 = Superior Electric Co. Model MZ1156-3P Powerstat; 115/0-135 volts, 135 amperes, 6 seconds rise time.
503T	Covat	Three phase, hand operated Superior Electric Co. Powerstat. Specify by Model, input voltage and output current rating.
504T	Covat	Three phase, motor driven. Specify by Model, input voltage and output current rating, and rise time for maximum output voltage, from zero start.
600T	Autotransformers	All 230 V in, 115 out. Specified by volt-ampere rating. United Transformer Co. series R41-R46, or equivalent. EXAMPLE: 70T 500 = Autotransformer, 230/115 V, 500 VA. UTC #R-45, or equivalent.
601T	Isolation Transformer	All 110-120 volts in, 110-120 volts out; specified by volt ampere ratings. United Transformer Co. Series R72-77 inclusive. EXAMPLE: 71T40 = isolation transformer, 115/115 volts, 40 VA. UTC #R72, or equivalent.

* Covat—COntinuously Variable Auto Transformer.

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1V	Tube rectifier	Filament: ..... volts, ... amperes; average plate current: ..... milliamperes maximum; Inverse peak: .....; Mfgr. and #.....
2V	Tube rectifier	Filament: 1.3 volts, 0.3 amperes; Average current: 2 milliamperes maximum. Inverse peak: 30 kv. Type 1B3.
3V	Tube rectifier	Filament: 1.6 volts, 1.25 amperes; Average current: 2 milliamperes maximum; Inverse peak: 60 kv; RCA type 5825.
4V	Tube rectifier	Filament: 2.5 volts, 5 amperes; Average current: 20 milliamperes maximum; Inverse peak: 40 kv; type 8013 or 8013A.
5V	Tube rectifier	Filament: 5 volts, 6 amperes; Average current; 100 milliamperes maximum; Inverse peak: 40 kv; type 8020.
6V	Tube rectifier	Filament: 6.0 volts ,4.5 amperes; Average current: 25 milliamperes maximum; Inverse peak: 140 kv; Dunlee type VR3B, or equivalent.
7V	Tube rectifier	Filament: 5.0 volts, 10 amperes; Average current: 250 milliamperes; Inverse peak: 60 kv; Eimac type 250R.
1W	Line cord	AC line cord; 6 feet long, 2 conductors, #18 gauge wire, stranded, consisting of 16 strands of #30 wire; neoprene insulation. Cornish Wire Co. #1462, or equivalent.
2W	Output cable	RG 8/U coaxial cable.
3W	Output cable	RG 17/U coaxial cable.
4W	Output cable	RG 19/U coaxial cable.
5W	Output cable	RG 59/U coaxial cable.
6W	Interconnecting cable	8 conductor, #16 stranded cable; rubber insulation on wires, neoprene outer jacket. See parts list for length.
7W	Interconnecting cable	12 conductor, #16 stranded cable; rubber insulation on wires, neoprene outer jacket. See parts list for length.
8W	Interconnecting cable	.... conductor, ... stranded cable; rubber insulation on wires, neoprene outer jacket. See parts list for length.
		NOTE: { XF1 is holder for fuse F1. XI3 is holder for lamp I3. XV1 is socket for tube V1, etc.
1XF	Fuse holder	Buss type HKP fuse assembly, or equivalent (15 amperes, or less, rating.)
2XF	Fuse holder	Buss type HPC, or equivalent, fuse assembly. (30 amperes, or less, rating.)
1XI	Pilot light holder	Dialco type 811308-437 assembly. Clear faceted lens, with built-in resistor. (for 1I neon glow lamp.)
2XI	Pilot light holder	Dialco type 810B-43 assembly, or equivalent; no resistor in base. (See parts list of jewel color.)
3XI	Pilot light holder	Dialco type 4931-L-2 or equivalent.

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4XI	Pilot light holder	Dialco type 51901-43 (see parts list for jewel color.) (for 2I incandescent lamp.)
5XI	Pilot light holder	Dialco type 95-4635-L46, or equivalent. (for 4I neon glow lamp.)
1XV	Tube socket	Plastic cleat lampholder; medium base; 250 volts, 660 watts; Monowatt #GE 1640-1, or equivalent.
2XV	Tube socket	Octal tube socket, bakelite insulation; Amphenol #77-MIP-8 or equivalent.
3XV	Tube socket	4 prong breadboard type; EBY 12-4.
4XV	Tube socket	4 pin, medium bayonet, steatite; Johnson Co. #123-210, or equivalent.
5XV	Tube socket	4 pin, standard jumbo, steatite; Johnson Co. #123-211, or equivalent.
6XV	Tube socket	Octal bread board; EBY 12-8.
7XV	Tube socket	4 pin tube socket, bakelite insulation; Amphenol #77-MIP-4 or equivalent.
8XV	Tube socket	Ceramic cleat receptacle; medium base; 250 volts, 660 watts; Circle #226 or equivalent.
9XV	Tube socket	7 pin miniature, Amphenol #147-905.
10XV	Tube socket	9 pin miniature, Amphenol #59-406.
1CR	Selenium Rectifier	Half wave section; 115 volts ac in; 130 volts dc out; 100 milliamperes. Federal Telephone and Radio #1004.
2CR	Selenium Rectifier	Full wave bridge; 115 volts ac in; 90 volts dc out; 750 milliamperes; Opad-Green B6-750, or equivalent.
3CR	Selenium Rectifier	Full wave bridge instrument rectifier; 5 ma dc maximum; Conant type 160-C.
4CR	Selenium Rectifier	Germanium rectifier; type IN34.
1TB	Terminal Board	Jones barrier strips, Cinch Jones series 141; Specify by number of contacts. (Tie points for interconnecting wires.) EXAMPLE: 1TB4 = Cinch Jones #4-141 terminal board.
2TB	Terminal Board	Jones barrier strips, Cinch Jones series 142, specify by number of contacts. (Tie points for interconnecting wires.) EXAMPLE: 2TB4 = Cinch Jones #4-142 terminal board.
3TB	Terminal Board	5 position; Precision Metal Products #2063. (Mounting boards for small sizes circuit components.)
4TB	Terminal Board	5 position; Precision Metal Products #2064. (Mounting boards for small sizes circuit components.)
1VR	Electronic line voltage regulator	Input, 95-130 volts; output, 110-120 volts; regulation accuracy 0.1%. Specify by voltampere rating, which is also Sorenson & Co. Model #..... EXAMPLE: 1VR 150 = regulator per above, 150 VA rating, Sorenson & Co. Model 150.
2VR	Electronic line voltage regulator	Input, 195-250 volts; output, 210-240 volts; regulation accuracy 0.1%. Specify by voltampere rating, which is also Sorenson Model #..... .
3VR	Magnetic line voltage regulator	Input, 95-125 volts; output, 115 volts; regulation accuracy 1%. Sola Electric Co. Series 30,000 or equivalent. Specify by voltampere rating. EXAMPLE: 3VR500 = regulator per above, 500 VA rating; Sola model 30808, or equivalent.

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